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Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals

Sub-Committee of Experts on the Transport of Dangerous Goods

Forty-fifth session
Geneva, 23 June – 2 July 2014
Item 7 (a) of the provisional agenda
Miscellaneous proposals for amendments to the Model Regulations on the Transport of Dangerous Goods: fuels in machinery or equipment

Fuels in engines and machinery

Submitted by the expert from Belgium and DGAC[1]

Introduction

1. During its forty-fourth session, the Sub-Committee discussed the issue of fuels in engines and machinery extensively (see ST/SG/AC.10/C.3/2013/67 (DGAC), informal documents INF.7 (DGAC), INF.59 (Belgium on behalf of the lunchtime working group) and decided the following:

(a) Prepare a proposal to introduce a new UN XXXX applicable to engines/machinery powered by flammable liquids/flammable gases/fuels cells. This new UN number should incorporate the provisions of SP 363;

(b) Develop a proposal to include appropriate hazard communication (e.g. flammability risk label, mention in transport document), linked to different quantity thresholds. The communication of "subsidiary risks" (e.g. when also lithium batteries are contained in the same machinery) should be the subject of a separate special provision, also depending on developments for hazard communication for lithium batteries

[1] In accordance with the programme of work of the Sub-Committee for 2013-2014 approved by the Committee at its sixth session (refer to ST/SG/AC.10/C.3/84, para. 86 and ST/SG/AC.10/40, para. 14).

(c) Draft the necessary consequential amendments to various parts of the Regulations (definition of vehicles, SP 363, SP 301, SP 312, SP 240, ...). For this work, the working group highlighted the following items for consideration:

(i) Identification of the types of fuels (with different thresholds, different UN numbers, ...);

(ii) Distinguishing between vehicles (e.g. self-propelled) and machinery;

(iii) Fuels which are only environmentally hazardous;

(iv) Evaluation of the already developed modal provisions when drafting new text (e.g. IMDG SP 961 and SP 962, ICAO provisions for vehicles/machinery containing lithium batteries, ...);

(v) Ongoing work for classification and hazard communication in class 9.

2. In line with this work flow the expert from Belgium and DGAC propose that:

(a) The entry for UN 3166 ENGINE, INTERNAL COMBUSTION or VEHICLE, FLAMMABLE GAS POWERED or VEHICLE, FLAMMABLE LIQUID POWERED or ENGINE, FUEL CELL, FLAMMABLE GAS POWERED or ENGINE, FUEL CELL, FLAMMABLE LIQUID POWERED or VEHICLE, FUEL CELL, FLAMMABLE GAS POWERED or VEHICLE, FUEL CELL be limited to "vehicles" as defined in SP 240, meaning self-propelled apparatus designed to carry one or more persons or goods. This would result in the proper shipping name "ENGINE, INTERNAL COMBUSTION" being removed from this entry and covered in a new entry UN XXXX.

No limits on the amount of fuel in vehicle fuel tanks are proposed since this is currently the case for land mode regulations such as ADR and 49 CFR. It is anticipated that the modal authorities may impose limits. Consistent with other regulations the presence of other dangerous goods (e.g. batteries, air bags, fire extinguishers, compressed gas accumulators or safety devices necessary for the operation of the vehicle) would be permitted under the condition that they are part of the vehicle.

(b) A new entry UN XXXX is proposed for all internal combustion engines, machinery or equipment containing fuel. SP 363 would be applied to this entry to establish specific quantity thresholds (450 l, 1500 l) applicable to hazard communication requirements. Except for air transport, engines or equipment containing only a residual amount of fuel would not be subject to the regulations.

(c) UN 3363, Dangerous goods in machinery or apparatus would only be used for machinery, equipment or apparatus containing small quantities of dangerous goods as a residue or an integral element of the machinery or apparatus consistent with SP 301;

(d) SP 363 is to be deleted for the entries for fuels (e.g. UN 1202, UN 1203, etc). The text from SP 363 will be revised to be consistent with the proposal to apply it only to the new UN XXXX for all internal combustion engines, machinery or equipment containing fuel.

(e) A new SP YYY would be assigned to UN 3166 to clarify the meaning of "vehicles" consistent with the definition in SP 240 that currently applies to UN 3171, BATTERY-POWERED VEHICLE or BATTERY-POWERED EQUIPMENT.

(f) SP 312 is proposed to be revised so that it only addresses provisions for vehicles. The provisions for engines, equipment or machinery will reappear in the new SP XYZ;

(g) It is proposed to assign packing instruction P907 to UN XXXX. P907 will be amended to include engines but the general requirements of 4.1.1 applicable to UN 3363, remain only applicable to UN 3363, as certain of these provisions are not adequate for UN XXXX (e.g. 4.1.1.8, 4.1.1.15, etc.).

(h) Specific requirements for additional hazard communication (e.g. for machinery with internal combustion and lithium batteries) should be the subject of separate proposals pending on the ongoing work on hazard communication for articles in class 9. General requirements for additional dangerous goods are included in the proposal.

(i) No proposals are included to address fuels that are only environmentally hazardous since the authors believe that these could equally be assigned to the entries proposed in this paper that contain flammable liquids or other dangerous goods.

Proposal

3. Amend the proper shipping name of UN 3166 to read as follows:

UN 3166 ~~ENGINE, INTERNAL COMBUSTION or~~ VEHICLE, FLAMMABLE GAS POWERED or VEHICLE, FLAMMABLE LIQUID POWERED or ~~ENGINE, FUEL CELL, FLAMMABLE GAS POWERED or ENGINE, FUEL CELL, FLAMMABLE LIQUID POWERED~~ or VEHICLE, FUEL CELL, FLAMMABLE GAS POWERED or VEHICLE, FUEL CELL, FLAMMABLE LIQUID POWERED

4. Amend SP 312 to read as follows:

Vehicles ~~or machinery~~ powered by a fuel cell engine shall be consigned under the entries UN 3166 VEHICLE, FUEL CELL, FLAMMABLE GAS POWERED or UN 3166 VEHICLE, FUEL CELL, FLAMMABLE LIQUID POWERED, ~~or UN 3166 ENGINE, FUEL CELL, FLAMMABLE GAS POWERED or UN 3166 ENGINE, FUEL CELL, FLAMMABLE LIQUID POWERED~~ as appropriate. These entries include hybrid electric vehicles powered by both a fuel cell and an internal combustion engine with wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries, transported with the battery(ies) installed.

Other vehicles which contain an internal combustion engine shall be consigned under the entries UN 3166 VEHICLE, FLAMMABLE GAS POWERED or UN 3166 VEHICLE, FLAMMABLE LIQUID POWERED, as appropriate. These entries include hybrid electric vehicles powered by both an internal combustion engine and wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries, transported with the batteries installed. Lithium batteries shall meet the requirements of 2.9.4.

5. Delete the reference to SP 363 in column (6) of the dangerous goods list for UN 3475, 1863, 1268, 1223, 1203, 1202.

6. Add a new SP YYY to UN 3166 as follows:

This entry applies to vehicles powered by flammable liquid or gas internal combustion engines or fuel cells. Hybrid electric vehicles powered by both an internal combustion engine and wet batteries, sodium batteries, lithium metal

batteries or lithium ion batteries, transported with the batteries installed shall be consigned under this entry. Vehicles powered by wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries shall be consigned under the entry UN 3171. For the purpose of this special provision, vehicles are self-propelled apparatus designed to carry one or more persons or goods of wheeled or tracked construction. Examples of such vehicles are cars, motorcycles, trucks, locomotives, scooters, three- and four-wheeled vehicles or motorcycles, lawn tractors, self-propelled farming and construction equipment, boats and aircraft or and any other self-propelled apparatus.

Dangerous goods such as batteries, air bags, fire extinguishers, compressed gas accumulators, safety devices and other integral components of the vehicle that are necessary for the operation of the vehicle or for the safety of its operator or passengers, must be securely installed in the vehicle and are not otherwise subject to these Model Regulations.

7. Amend P907 to read as follows:

P907	**PACKING INSTRUCTION**	P907
This Packing Instruction applies to UN 3363 and UN XXXX. If **the** *engine,* equipment, machinery or apparatus is constructed and designed so that the receptacles containing the dangerous goods are afforded adequate protection, an outer packaging is not required. **Dangerous** goods in *engines,* equipment, machinery or apparatus shall otherwise be packed in outer packagings constructed of suitable material, and of adequate strength and design in relation to the packaging capacity and its intended use, and meeting the applicable requirements of **4.1.1.1.** For Division 2.2 gases, the inner cylinder or receptacle, its contents and filling density shall be to the satisfaction of the **competent** authority of the country in which the cylinder or receptacle is filled. In **addition**, the manner in which receptacles are contained within the *engine,* equipment machinery or apparatus, shall be such that under normal conditions of transport, damage to receptacles containing the dangerous goods is unlikely; and in the event of damage to receptacles containing solid or liquid dangerous goods, no leakage of the dangerous goods from the *engine,* equipment, machinery or apparatus is possible (a leakproof liner may be used to satisfy this requirement). Receptacles containing dangerous goods shall be so installed, secured or cushioned as to prevent their breakage or leakage and so as to control their movement within the *engine,* equipment, machinery or apparatus during normal conditions of transport. Cushioning material shall not react dangerously with the content of the receptacles. Any leakage of the contents shall not substantially impair the protective properties of the cushioning material.		
Special packing provisions: **PP XX** *For UN 3363, r*eceptacles containing dangerous goods shall conform to the general provisions in 4.1.1, except that 4.1.1.3, 4.1.1.4, 4.1.1.12 and 4.1.1.14 do not apply.		

8. Assign PP XX to UN 3363 in column 9 of the dangerous goods list.

9. Insert a new UN number XXXX in the dangerous goods list as follows:

						Limited and excepted		*Packaging*		*Portable tanks and bulk containers*	
						quantities		*Packing instructions*	*Special packing provisions*	*Instructions*	*Special provisions*
UN No.	*Name and description*	*Class*	*Subsidiary risk*	*Packing group*	*Special provisions*						
(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9)	(10)	(11)
XXXX	ENGINE, INTERNAL COMBUSTION or ENGINE, FUEL CELL, FLAMMABLE GAS POWERED or ENGINE, FUEL CELL, FLAMMABLE LIQUID POWERED or EQUIPMENT, INTERNAL COMBUSTION or EQUIPMENT, FUEL CELL, FLAMMABLE GAS POWERED or EQIPMENT, FUEL CELL, FLAMMABLE LIQUID POWERED or MACHINERY, INTERNAL COMBUSTION or MACHINERY, FUEL CELL, FLAMMABLE GAS POWERED or MACHINERY, FUEL CELL, FLAMMABLE LIQUID POWERED	3			XYZ	0	E0	P907			

10. SP 363 shall read as follows:

SP 363

This entry applies to engines, equipment or machinery, powered by internal combustion systems or fuel cells (e.g. combustion engines, generators, compressors, turbines, heating units, etc.), other than vehicles or those with small quantities of

dangerous goods as a residue or an integral element of the machinery or apparatus subject to special provision 301.

Engines, equipment or machinery may contain other dangerous goods required for their functioning or safe operation (e.g. batteries, fire extinguishers, compressed gas accumulators or safety devices) if they are part of the original design type.

An engine, equipment or machinery may be considered as not containing fuel and not subject to these Model Regulations when the components, means of containment including any fuel lines have been completely drained, sufficiently cleaned of residue, and purged of vapours to remove any potential hazard.

The engine, equipment or machinery are not subject to any other requirements of these Model Regulations if the following requirements are met:

(a) The engine, equipment or machinery, including the means of containment containing dangerous goods, shall be in compliance with the construction requirements specified by the competent authority;

(b) Any valves or openings (e.g. venting devices) shall be closed during transport;

(c) The engine, equipment or machinery shall be oriented to prevent inadvertent leakage of dangerous goods and secured by means capable of restraining the engine, equipment or machinery to prevent any movement during transport which would change the orientation or cause it to be damaged;

(d) Where the engine, equipment or machinery contains not more than 450 liters of dangerous goods, the labelling requirements of 5.2.2 shall apply and where there is more than 450 liters but not more than 1,500 liters the engine, equipment or machinery shall be labelled on all four external sides in accordance with 5.2.2;

(e) Where the means of containment contains more than 1500 liters, the engine, equipment or machinery shall be placarded on all four external sides in accordance with 5.3.1.1.2; and

(f) A transport document in accordance with 5.4 is required where the means of containment has a capacity greater than 1500 liters.